UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/690,215	10/17/2000	Mathew A. Rybicki	SIG99018	2171

7590 10/06/2003

GARLICK, HARRISON & MARKISON LLP.
P.O. BOX 160727
AUSTIN, TX 78716

EXAMINER	
MICHALSKI, JUSTIN I	
ART UNIT	**PAPER NUMBER**
2644	3

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/690,215	RYBICKI ET AL.	
	Examiner	Art Unit	
	Justin Michalski	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/17/2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani (US Patent 6,498,852) in view of Goff (US Patent 6,317,117).

Regarding Claim 1, Grimani discloses an audio system comprising a first stereo input (11, 13), a second stereo audio input (14, 15), and a monotone audio input (12). Grimani also discloses a tone controller including a low pass filter operably coupled to filter the monotone audio signal (Fig 9, filter 128), wherein the low pass filter passes a bass component of the monotone audio output substantially unattenuated and attenuates higher frequency components of the monotone audio output; filters operably coupled to filter the first and second stereo audio components (filters 128), a summing module (summer 6) operably coupled to sum the bass component, and filtered components of the stereo inputs to produce a tone controlled audio output. Grimani does not disclose the use of a high pass filter or a band pass filter. However, Grimani discloses use of a film soundtrack, television program soundtrack, or a musical recording (Column 1, lines 22-24) which would include an audio codec for producing a first and second audio output from audio information which would be coupled to the tone controller through the inputs (11,13, and 12).

Goff discloses use of a high pass filter (Figure 15d) for use in audio spectrum or tone control processors. Goff teaches that high pass filters are used in audio spectrum processors (i.e. tone controllers) (Column 1, lines 11-18) and high pass filters pass a signal over a given frequency band and attenuate a signal over an adjacent region (Column 2, lines 8-11). Goff further discloses a bell filter (Figure 12a) (i.e. band pass filter) for use in audio spectrum or tone control processors. Goff teaches the filters amplifies the signal over a limited frequency band or region (Column 1, lines 19-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute filter 128 coupled to the first and second audio inputs of Grimani with the high pass and bandpass filters respectively as disclosed by Goff in order to produce a more high fidelity audio output.

Regarding claim 5, Goff further discloses control of electronic filter (i.e notch and bandpass filter) parameters customized based on parameters of an audio spectrum processor (i.e. computer). (Column 3, line 65- Column 4, line 12).

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 1 above, and further in view of Maag et al. (US Patent 5,892,833). As stated above apropos of claim 1, Grimani as modified makes obvious all elements of that claim. Grimani as modified does not disclose means for volume setting.

Maag et al. discloses a gain equalization system (Figure 6c) which includes an input of audio information and processing filters including attenuators (i.e. volume controllers) (references 215a, 215b, 216a, 216n). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the volume controllers as taught by

Maag et al. with the device as disclosed by Goff as modified as to adjust the volume of the left and right channels of audio information based on the level of attenuation (i.e. volume setting) a first and second volume setting in order to produce a high fidelity audio output. Placing the volume controllers after the filters would allow amplification of the right and left channels including bass and treble components of the high pass filter from the first inputs, amplification of the band pass components from the second audio inputs, and amplification of the bass components from the monotone input.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 1 above, and further in view of Lin et al. (US Patent 6,088,461). As stated above apropos of claim 1, Grimani as modified makes obvious all elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 1 above, and further in view of Lin et al. (US Patent 6,088,461). As stated above apropos of claim 1, Grimani as modified makes obvious all elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 1 above, and further in view of Bevan et al. (US Patent 6,064,066). As stated above apropos of claim 1, Grimani as modified makes obvious all elements of that claim. Grimani as modified does not disclose the summing module comprising of an operational amplifier. It would be obvious to one skilled in the art to use an operational amplifier having a first input coupled to a reference voltage and the second input coupled to selected voltages to sum. Bevan et al. illustrates this principle in Figure 13 using operational amplifier 1328 (Column 8, lines 53-55).

7. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani (US Patent 6,498,852) in view of Goff (US Patent 6,317,117).

Regarding Claim 7, Grimani discloses an audio system comprising a first stereo audio input (Inputs 11 and 13) and a second stereo audio input (Inputs 14 and 15) based on audio information; a tone controller (Figure 10) which includes a filter operably coupled to filter the first and second stereo audio input (Figure 9, filter 128), wherein the filter passes a component of the first and second stereo audio input; and a summing module (Summer 6) operably coupled to sum the two filters and produce a tone controlled audio output. Grimani does not disclose the use of a notch filter or a band pass filter. However, Grimani discloses use of a film soundtrack, television program soundtrack, or a musical recording (Column 1, lines 22-24) which would include an audio codec for producing a first and second audio output from audio information which would be coupled the tone controller through the inputs Rin and Lin.

Goff discloses use of a notch filter (Figure 12b) for use in audio spectrum or tone control processors. Goff teaches that notch filters are used in audio spectrum processors (i.e. tone controllers) (Column 1, lines 11-18) and notch filters attenuates a signal over a limited frequency band or region (Column 1, lines 42-45). Goff further discloses a bell filter (Figure 12a) (i.e. band pass filter) for use in audio spectrum or tone control processors. Goff teaches the filters amplify the signal over a limited frequency band or region (Column 1, lines 19-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute filter 128 coupled to the first and second

audio inputs of Grimani with the notch and bandpass filters respectively as disclosed by Goff in order to produce a more high fidelity audio output.

Regarding claim 10, Goff further discloses control of electronic filter (i.e notch and bandpass filter) parameters customized based on parameters of an audio spectrum processor (i.e. computer). (Column 3, line 65- Column 4, line 12).

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 7 above, and further in view of Maag et al. (US Patent 5,892,833). As stated above apropos of claim 7, Grimani as modified makes obvious all elements of that claim. Grimani as modified does not disclose means for volume setting.

Maag et al. discloses a gain equalization system (Figure 6c) which includes an input of audio information and processing filters including attenuators (i.e. volume controllers) (references 215a, 215b, 216a, 216n). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the volume controllers as taught by Maag et al. with the device as disclosed by Grimani as modified as to adjust the volume of the left and right channels of audio information based on the level of attenuation (i.e. volume setting) a first and second volume setting in order to produce a high fidelity audio output. Placing the volume controllers after the filters would allow amplification of the bass and treble components of the notch filter from the first inputs and amplification of the band pass components from the band pass filter of the second audio inputs.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 7 above and further in view of Lin et al. (US Patent 6,088,461).

As stated above apropos of claim 7, Grimani as modified makes obvious all elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 7 above, and further in view of Bevan et al. (US Patent 6,064,066). As stated above apropos of claim 7, Grimani as modified makes obvious all elements of that claim. Goff as modified does not disclose the summing module comprising of an operational amplifier. It would be obvious to one skilled in the art to use an operational amplifier having a first input coupled to a reference voltage and the second input coupled to selected voltages to sum. Bevan et al. illustrates this principle in Figure 13 using operational amplifier 1328 (Column 8, lines 53-55).

11. Claims 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani (US Patent 6,498,852) in view of Goff (US Patent 6,317,117).

Regarding Claim 12, Grimani discloses an audio system comprising a first stereo input (11,13), a second stereo audio input (14,15), and a monotone audio input (14). Grimani also discloses a tone controller including a low pass filter operably coupled to filter the monotone audio signal (Figure 9, filter 128), wherein the low pass filter passes a bass component of the monotone audio output substantially unattenuated and attenuates higher frequency components of the monotone audio output; filters operably coupled to filter the first and second stereo audio signals (filters 128), a summing module (summer 6) operably coupled to sum the bass component, and filtered components of the stereo inputs to produce a tone controlled audio output. Grimani does not disclose the use of a high pass filter or a band pass filter. Although Grimani does not disclose the device being an audio codec, it would be obvious to one of ordinary skill in the art that the device could be fabricated using integrated circuit technology into an audio codec. Although Grimani does not disclose the device being an audio codec, it would be obvious to one of ordinary skill in the art that the device could be fabricated using integrated circuit technology into an audio codec. Grimani discloses use of a film soundtrack, television program soundtrack, or a musical recording (Column 1, lines 22-24) which would include an audio codec for producing a first and second audio output from audio information which would be coupled the tone controller through the inputs Rin and Lin.

Goff discloses use of a pass band (i.e. high pass) filter (Figure 15d) for use in audio spectrum or tone control processors. Goff teaches that high pass filters are used in audio spectrum processors (i.e. tone controllers) (Column 1, lines 11-18) and high pass filters

pass frequencies over a given frequency band and attenuate a signal over an adjacent region (Column 2, lines 8-11). Goff further discloses a bell filter (Figure 12a) (i.e. band pass filter) for use in audio spectrum or tone control processors. Goff teaches the filters amplify the signal over a limited frequency band or region (Column 1, lines 19-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute filter 128 coupled to the first and second audio inputs of Grimani with the high pass and band pass filters respectively as disclosed by Goff in order to produce a more high fidelity audio output.

Regarding Claim 16, Goff further discloses control of electronic filter (i.e notch and bandpass filter) parameters customized based on parameters of an audio spectrum processor (i.e. codec). (Column 3, line 65- Column 4, line 12).

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 12 above, and further in view of Maag et al. (US Patent 5,892,833). As stated above apropos of claim 12 Grimani as modified makes obvious all elements of that claim. Grimani as modified does not disclose means for volume setting.

Maag et al. discloses a gain equalization system (Figure 6c) which includes an input of audio information and processing filters including attenuators (i.e. volume controllers) (references 215a, 215b, 216a, 216n). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the volume controllers as taught by Maag et al. with the device as disclosed by Goff as modified to adjust the volume of the left and right channels of audio information based on the level of attenuation (i.e. volume setting) of a first and second volume setting in order to produce a high fidelity audio output.

Placing the volume controllers after the filters would allow amplification of the right and left channels including treble components of the high pass filter from the first inputs, amplification of the mid band components from the second audio inputs, and amplification of the bass components from the monotone input.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 12 above and further in view of Lin et al. (US Patent 6,088,461). As stated above apropos of claim 12, Grimani as modified makes obvious all elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

14. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 12 above and further in view of Lin et al. (US Patent 6,088,461). As stated above apropos of claim 12, Grimani as modified makes obvious all

elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

15. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 12 above, and further in view of Bevan et al. (US Patent 6,064,066). As stated above apropos of claim 12, Grimani as modified makes obvious all elements of that claim. Goff as modified does not disclose the summing module comprising of an operational amplifier. It would be obvious to one skilled in the art to use an operational amplifier having a first input coupled to a reference voltage and the second input coupled to selected voltages to sum. Bevan et al. illustrates this principle in Figure 13 using operational amplifier 1328 (Column 8, lines 53-55).

16. Claim 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani (US Patent 6,498,852) in view of Goff (US Patent 6,317,117).

Regarding Claim 18, Grimani discloses a device comprising a first stereo audio input (Inputs 11 and 13) and a second stereo audio input (Inputs 14 and 15) based on audio information; a tone controller (Figure 10) which includes a filter operably coupled to filter the first and second stereo audio input (Figure 9, filter 128), wherein the filter passes a component of the first and second stereo audio input; and a summing module (Summer 6) operably coupled to sum the two filters and produce a tone controlled audio output. Grimani does not disclose the use of a notch filter or a band pass filter. Although Grimani does not disclose the device being an audio codec, it would be obvious to one of ordinary skill in the art that the device could be fabricated using integrated circuit technology into an audio codec. Although Grimani does not disclose the device being an audio codec, it would be obvious to one of ordinary skill in the art that the device could be fabricated using integrated circuit technology into an audio codec. Grimani discloses use of a film soundtrack, television program soundtrack, or a musical recording (Column 1, lines 22-24) which would include a device for producing a first and second audio output from audio information which would be coupled the tone controller through the inputs Rin and Lin.

Goff discloses use of a notch filter (Figure 12b) for use in audio spectrum or tone control processors. Goff teaches that notch filters are used in audio spectrum processors (i.e. tone controllers) (Column 1, lines 11-18) and notch filters attenuates a signal over a limited frequency band or region (Column 1, lines 42-45). Goff further discloses a bell filter (Figure 12a) (i.e. band pass filter) for use in audio spectrum or tone control processors. Goff teaches the filters amplify the signal over a limited frequency band or region (Column 1, lines 19-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute filter 128 coupled the first audio and second

inputs of Grimani with the notch and bandpass filters respectively as disclosed by Goff in order to produce a more high fidelity audio output.

Regarding claim 21, Goff further discloses control of electronic filter (i.e notch and bandpass filter) parameters customized based on parameters of an audio spectrum processor (i.e. codec). (Column 3, line 65- Column 4, line 12).

17. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 18 above, and further in view of Maag et al. (US Patent 5,892,833). As stated above apropos of claim 18, Grimani as modified makes obvious all elements of that claim. Grimani as modified does not disclose means for volume setting.

Maag et al. discloses a gain equalization system (Figure 6c) which includes an input of audio information and processing filters including attenuators (i.e. volume controllers) (references 215a, 215b, 216a, 216n). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the volume controllers as taught by Maag et al. with the device as disclosed by Grimani as modified as to adjust the volume of the left and right channels of audio information based on the level of attenuation (i.e. volume setting) a first and second volume setting in order to produce a high fidelity audio output. Placing the volume controllers after the filters would allow amplification of the bass and treble components of the notch filter from the first inputs and amplification of the band pass components from the band pass filter of the second audio inputs.

18. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 18 above and further in view of Lin et al. (US Patent

6,088,461). As stated above apropos of claim 18, Grimani as modified makes obvious all elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

19. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 18 above, and further in view of Bevan et al. (US Patent 6,064,066). As stated above apropos of claim 7, Grimani as modified makes obvious all elements of that claim. Grimani as modified does not disclose the summing module comprising of an operational amplifier. It would be obvious to one skilled in the art to use an operational amplifier having a first input coupled to a reference voltage and the second input coupled to selected voltages to sum. Bevan et al. illustrates this principle in Figure 13 using operational amplifier 1328 (Column 8, lines 53-55).

20. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani (US Patent 6,498,852) in view of Goff (US Patent 6,317,117).

Grimani discloses a device to receive audio information in a first stereo audio input (11,13), a second stereo audio input (14,15), and a monotone audio input (12) based on the audio information; and a tone controller operably coupled to receive the first stereo audio input, the second stereo audio input (filters 128), and the monotone audio input and produce an audio output. The tone controller consists of a low pass filter (Figure 9, filter 128) operably coupled to filter the monotone audio output substantially unattenuated and attenuates higher frequency components of the monotone audio output; filters operably coupled to filter the first and second stereo audio input, wherein the filters pass a component of the first and second stereo audio input. Grimani does not disclose use of a band pass or high pass filter. Grimani does discloses use of a film soundtrack, television program soundtrack, or a musical recording (Column 1, lines 22-24) which would include an audio codec for producing a first and second audio output from audio information which would be coupled the tone controller through the inputs (11,13, and 12).

Goff discloses use of a bell filter (i.e. band pass) filter (Figure 12a) for use in audio spectrum or tone control processors. Goff teaches that the filters amplify the signal over a limited frequency band or region (Column 1, lines 19-22) and are used in audio spectrum processors (i.e. tone controllers) (Column 1, lines 11-18). Goff also discloses the use of a pass band (i.e. high pass) filters (Figure 15d) that pass signals over a given frequency and attenuates a signal over an adjacent region (Column 2, lines 8-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute filter 128 coupled to the first and second stereo input of Grimani with the high

pass and band pass filters respectively as disclosed by Goff in order to produce a more high fidelity audio output.

21. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 23 above, and further in view of Maag et al. (US Patent 5,892,833).

Maag et al. discloses a gain equalization system (Figure 6c) which includes an input of audio information and processing filters including attenuators (i.e. volume controllers) (references 215a, 215b, 216a, 216n). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the volume controllers as taught by Maag et al. with the device as disclosed by Grimani as modified as to adjust the volume of the left and right channels of audio information based on the level of attenuation (i.e. volume setting) a first and second volume setting in order to produce a high fidelity audio output. Placing the volume controllers after the filters would allow amplification of the midband components of the second stereo signal from the band pass filter, amplification of the treble signals of the first stereo signal from the high pass filter, and amplification of the bass components from the monotone input.

22. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goff as modified as applied to claim 23 above and further in view of Lin et al. (US Patent 6,088,461). As stated above apropos of claim 23, Grimani as modified makes obvious all elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal

data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

23. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goff as modified as applied to claim 23 above and further in view of Lin et al. (US Patent 6,088,461). As stated above apropos of claim 23, Grimani as modified makes obvious all elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and

controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

24. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani (US Patent 6,498,852) in view of Goff (US Patent 6,317,117).

Grimani discloses a device to receive audio information in a first stereo audio input (11,13), a second stereo audio input (14,15), and a monotone audio input (12) based on the audio information; and a tone controller operably coupled to receive the first stereo audio input, the second stereo audio input, and the monotone audio input and produce an audio output. The tone controller consists of a low pass filter (Figure 9, filter 128) operably coupled to filter the monotone audio signal substantially unattenuated and attenuates higher frequency components of the monotone audio output; filter operably coupled to filter the first and second stereo audio input wherein the filters pass a component of the first and second stereo audio input. Grimani does not disclose use of a band pass or high pass filter. Although Grimani does not disclose the device being an audio codec, it would be obvious to one of ordinary skill in the art that the device could be fabricated using integrated circuit technology into an audio codec. Grimani discloses use of a film soundtrack, television program soundtrack, or a musical recording (Column 1, lines 22-24) which would include a device for producing a first and second audio output from audio information which would be coupled the tone controller through the inputs (11,13, and 12).

Goff discloses use of a bell filter (i.e. band pass) filter (Figure 12a) for use in audio spectrum or tone control processors. Goff teaches that the filters amplify the signal over a limited frequency band or region (Column 1, lines 19-22) and are used in audio spectrum

processors (i.e. tone controllers) (Column 1, lines 11-18). Goff also discloses the use of a pass band (i.e. high pass) filters (Figure 15d) that pass signals over a given frequency and attenuates a signal over an adjacent region (Column 2, lines 8-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute filter 128 coupled to the first and second stereo input of Grimani with the high pass and band pass filters respectively as disclosed by Goff in order to produce a more high fidelity audio output.

25. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimani as modified as applied to claim 27 above, and further in view of Maag et al. (US Patent 5,892,833). As stated above apropos of claim 23, Grimani as modified makes obvious all elements of that claim. Goff as modified does not disclose means for volume setting.

Maag et al. discloses a gain equalization system (Figure 6c) which includes an input of audio information and processing filters including attenuators (i.e. volume controllers) (references 215a, 215b, 216a, 216n). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the volume controllers as taught by Maag et al. with the device as disclosed by Grimani as modified as to adjust the volume of the left and right channels of audio information based on the level of attenuation (i.e. volume setting) a first and second volume setting in order to produce a high fidelity audio output. Placing the volume controllers after the filters would allow amplification of the midband components of the second stereo signal from the band pass filter, amplification of the treble signals of the first stereo signal from the high pass filter, and amplification of the bass components from the monotone input.

26. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goff as modified as applied to claim 27 above and further in view of Lin et al. (US Patent 6,088,461). As stated above apropos of claim 27, Grimani as modified makes obvious all elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

27. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goff as modified as applied to claim 27 above and further in view of Lin et al. (US Patent 6,088,461). As stated above apropos of claim 27, Grimani as modified makes obvious all elements of that claim. Grimani does not disclose a register for storing tone settings. Lin et al. discloses a processor (i.e. register) (Figure 1, processor 102) for storing audio signal data in memory (which would include bass and treble data of the audio signal) (Column 3, lines 39-43). Connected to the processor is a volume controller (106, 108, and figure 2) to

dynamically boost or reduce (i.e. control volume) the treble and base signals in the right and left channels (could also apply to left, right, and monotone channels) (Column 3, lines 55-57). Lin et al. teaches that tone control can be used to produce a more pleasing sound. (Column 4, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a device for storing audio data and controlling a volume controller with the device as disclosed by Grimani as modified in order to produce a more pleasing sound for each of the audio signals.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (703)305-5598. The examiner can normally be reached on 8 Hours, 5 day/week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

JIM

XU MEI
PRIMARY EXAMINER